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(12) UK Patent Application (19) GB (11) 2 363 423 (13) A

(43) Date of A Publication 19.12.2001

(21) Application No 0107579.5

(22) Date of Filing 28.03.2001

(30) Priority Data
(31) PN000U0010 (32) 30.03.2000 (33) IT

(51) INT CL[7]
E05B 65/12 , E05C 9/04

(52) UK CL (Edition S)
E2A AAK AMXH A106 A160 A402 A505
U1S S1212 S1820

(56) Documents Cited
WO 98/27116 A DE 004400828 A US 4781407 A

(58) Field of Search
UK CL (Edition S) E2A AAK AMXH AMXW AMXY
INT CL[7] E05B 65/12 , E05C 9/04
Online: EPODOC, JAPIO, WPI

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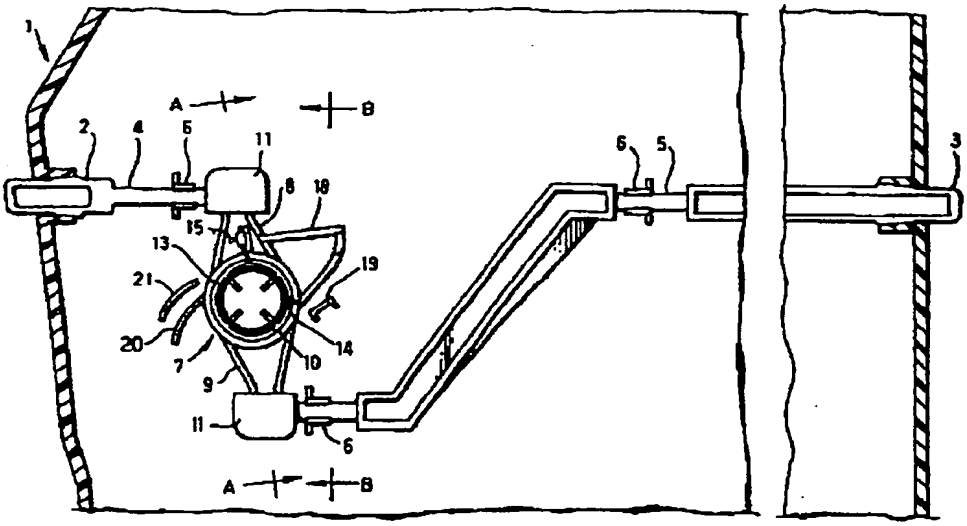
(54) Abstract Title
Vehicle glove box door latch actuation mechanism

(57) A latch mechanism for the door 1 of a glove box comprises at least two bolts 2, 3 arranged opposite each other on the door 1, operated by transmission rods 4, 5 which are biassed by spring means, e.g. a torsion spring 13, wherein the transmissions rods 4, 5 are articulated with corresponding arms 8, 9 of an actuating lever 7 pivotally mounted on the door 1. The arms 8, 9 of the lever 7 extend in a transverse direction with respect to the transmission rods 4, 5; at least one of the rods 4, 5 having a transverse connecting portion. Shaped portion 11 with wall 12 may articulate the transmission rod 4 and the actuating lever 7 and prevent the axial extraction of lever 7 from its pin. The actuating lever may have at least one flexible tongue 20 portion designed to contact a fixed shoulder to dampen end-of-travel movement of the lever. Flexible lugs (22, figure 2) of arms 8 may contact wall 12 of portion 11 to take up axial play between lever 7, rods 4, 5 and door.

Fig.1.



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At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

Fig.1.

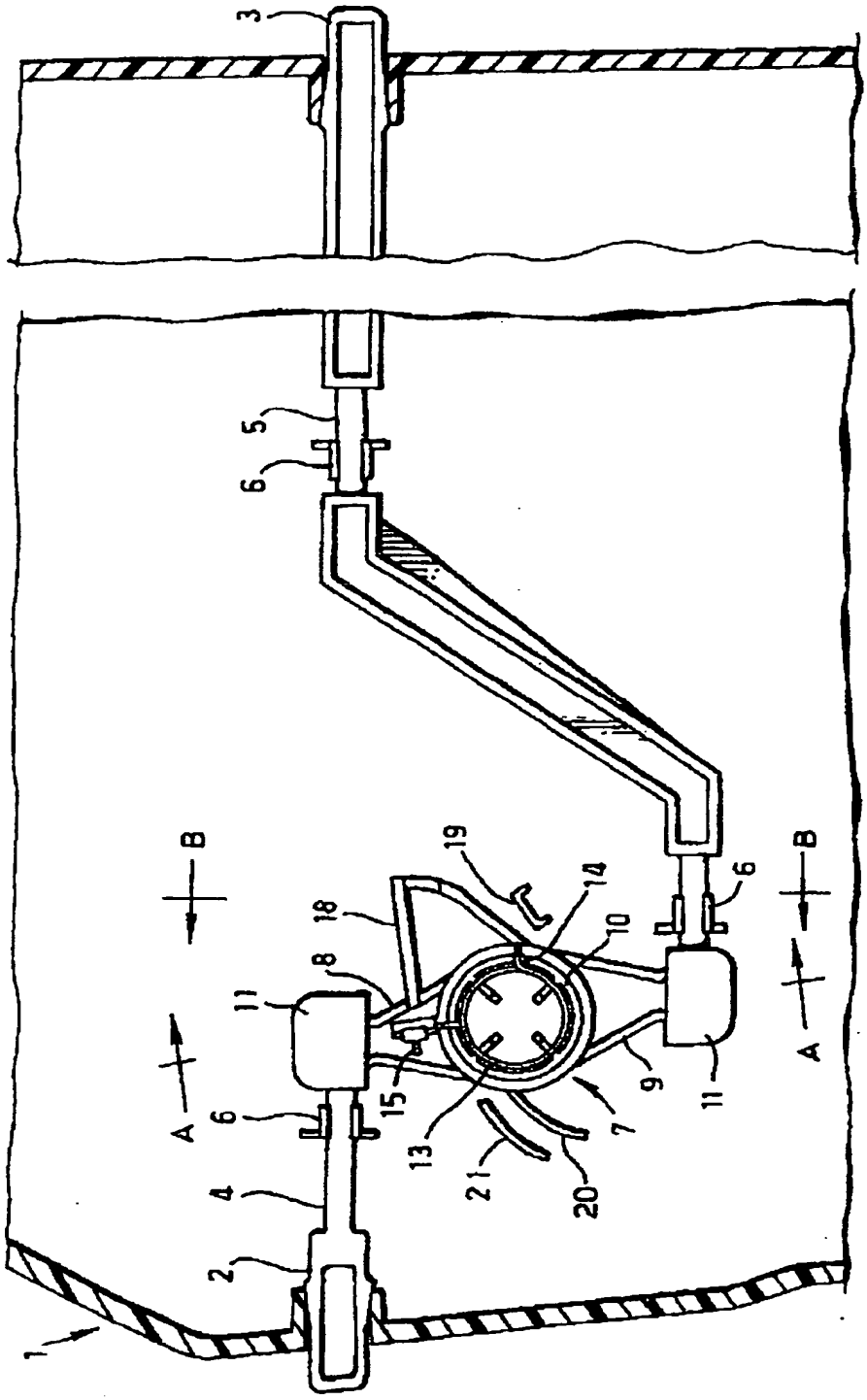


Fig.2.

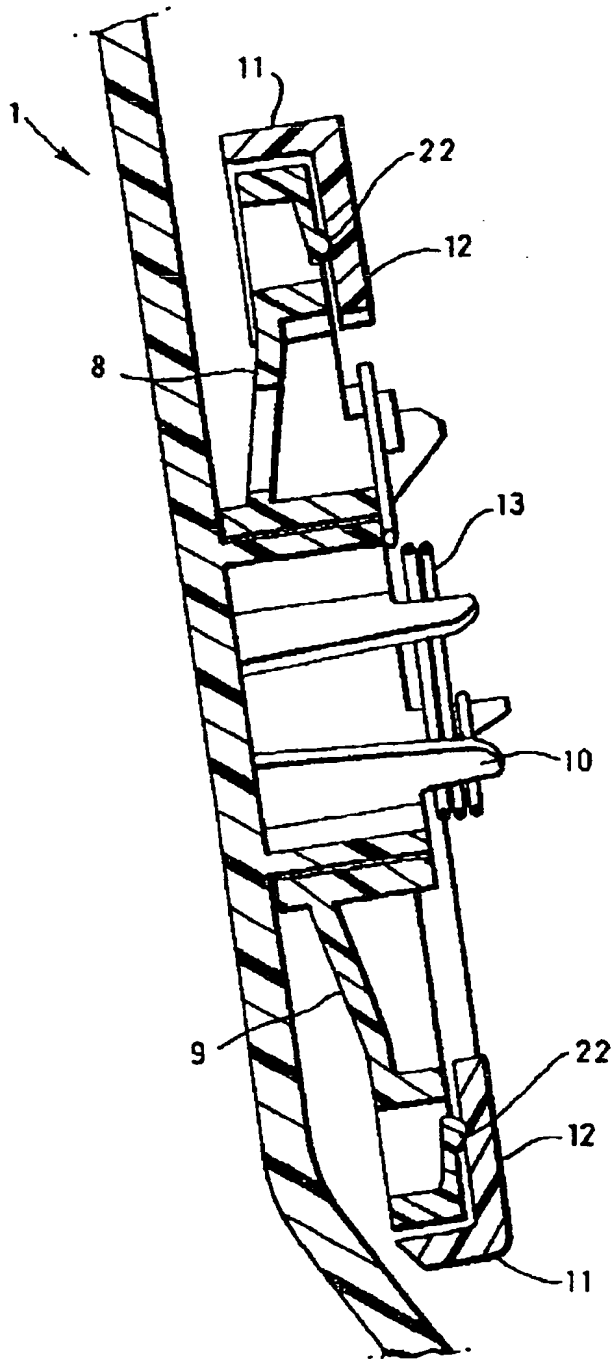
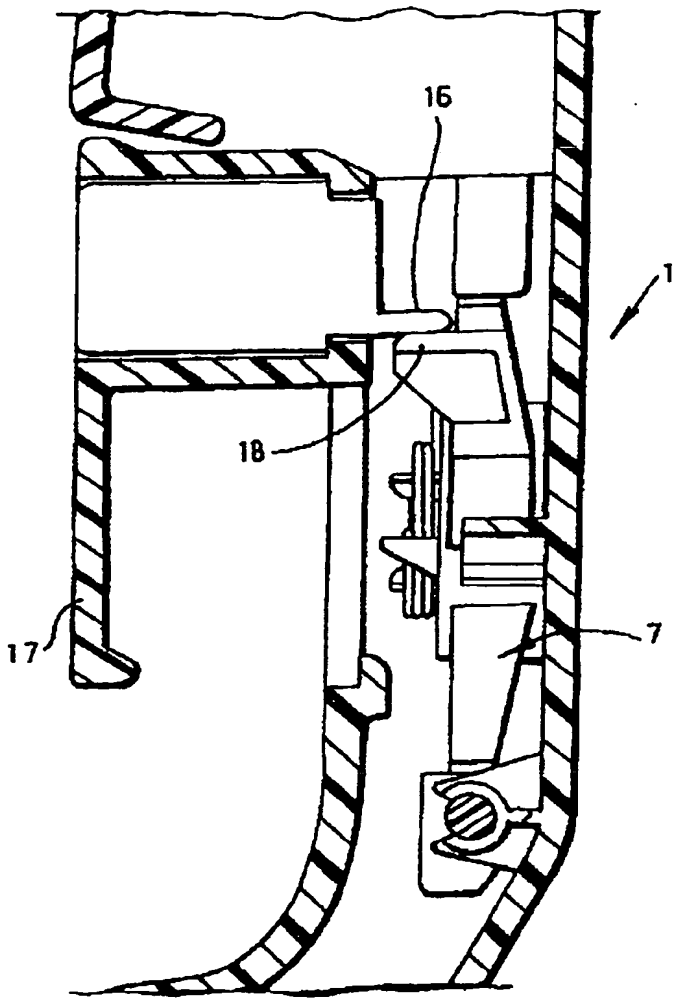


Fig.3.



DOOR FOR CLOSING GLOVE COMPARTMENT, OR THE LIKE, IN PARTICULAR FOR MOTOR VEHICLES

The present invention relates to a door for closing a glove compartment, or the like, in particular of the type provided in the dashboard of a motor vehicle.

As is known, in order to ensure an effective snap-engagement closure which is not affected by vibrations, these doors are preferably provided with two spring-loaded bolts, each of which is designed to engage with a corresponding fixed seat formed in the dashboard. In particular, the two bolts are arranged opposite each other and aligned in a direction parallel to the hinging axis of the door and comprise respective transmission rods hinged on respective levers located alongside and pivotally mounted on the door. The levers are interconnected by a tensile spring which tends to keep the said levers normally in an angular position such as to splay the bolts into the closed position.

A handle hingeably mounted on the door is provided with a nib designed to engage with the levers so as to cause them to rotate, overcoming the force of the spring in such a way as to displace longitudinally the bolts into the open position.

In order to prevent accidental axial extraction of the levers, it is known to pivotally mount the levers on respective pins which are formed integrally with the door by means of moulding and are shaped with undercuts, or the like, so as to engage axially the levers with a catch of the bayonet or snap-engagement type.

The manufacture of these shaped pins is undesirably critical and costly on an industrial scale since moulding of the said pins requires complex equipment of the type involving several movements.

Moreover, in order to prevent rubbing of the tensile spring against the adjacent surface of the door from producing noise which is highly undesirable in motor vehicles, it is required to insert a cushion of spongy soft material, or the like, in between, which cushion is subject to rapid wear and complicates assembly of the components.

In any case, the known solutions described above require a large number of components, assembly of which makes manufacture of the whole door very labourious.

An object of the present invention is that of providing a door for closing a glove compartment, or the like, in particular for motor vehicles, which comprises a limited number of simple, reliable and low-cost components.

Another object of the invention is that of providing a door of the type mentioned, in which the mechanical vibrations which may be the source of noise are minimized.

According to the present invention there is provided a door for closing a glove compartment, or the like, in particular for a motor vehicle, comprising a hinged shutter provided with at least two bolts which are arranged substantially opposite each other and normally kept in a splayed position by means of respective transmission rods which are biassed by spring means, wherein said transmission rods are articulated with respective, substantially opposite arms of a single actuating lever pivotally mounted on the shutter, at least one of the rods extending towards the respective arm of the lever with a transverse connecting portion.

The invention will be further described by way of non-limitative example with reference to the accompanying drawings, in which:-

Figure 1 shows schematically a rear view of the closing door according to a preferred embodiment of the invention, in the rest position;

Figure 2 shows, on a larger scale, the cross section A-A according to Figure 1; and

Figure 3 shows the cross section B-B according to Figure 1.

With reference to the figures, the door comprises principally a shutter 1 made preferably of rigid plastic material and designed to be hingeably mounted on a support body such as, for example, the dashboard of a motor vehicle, for closing a glove compartment, or the like.

On the rear larger surface, the shutter is provided with a pair of opposite bolts 2, 3 designed to engage with corresponding fixed locking seats (not shown) provided on the dashboard.

The bolts 2 and 3 are provided at the ends of respective transmission rods 4, 5, together with which they are preferably aligned and longitudinally slidable with respect to support sleeves 6 formed integrally on the shutter 1.

The bolts 2, 3 have, in between them, a single actuating lever 7 provided with two substantially opposite arms 8, 9 between which it is freely pivotally mounted on a pin 10 formed integrally with the shutter 1. The lever 7, the arms 8, 9 of which extend in a direction substantially transverse with respect to the bolts 2, 3 and to the respective

transmission rods 4, 5, is preferably made of an acetyl resin, or similar self-lubricating material.

The free ends of the arms 8, 9 of the lever, which preferably have a rounded shape, have respectively loosely articulated with them the transmission rods 4, 5, at least one of which (the rod 5, in the example according to Figure 1) extends towards the respective arm of the lever 7 with a transverse portion 5' which allows connection thereof while maintaining an advantageous longitudinal alignment between the two bolts 2, 3.

Alternatively, depending on the position of the pivot 10 and the dimensions of the lever 7, a transverse portion similar to 5' may be provided on the rod 4 or on both the rods 4 and 5.

In any case, each rod 4, 5 is preferably articulated with the end of the respective arm 8, 9 of the lever by means of a shaped portion 11 provided with a wall 12, or the like, which relative to the lever 7 is arranged in a position axially opposite the base of the pin 10, as shown in Figure 2. Consequently, the lever 7 does not require any particular special measure in order to prevent axial extraction thereof, since it is locked axially by the walls 12 of the rods 4, 5 which in turn are retained inside the support sleeves 6. The pivot pin 10 may therefore be shaped in an advantageously simple manner, in particular without undercuts, so that it may be simply moulded integrally with the shutter 1.

The pin 10 has, mounted on it, for example at its axial end with a small diameter, a tensile spring 13 having one end which bears against a shoulder 14 on the pin itself and an opposite end fastened to a tooth 15, or the like, which is formed integrally with the lever 7 and also keeps the spring 13 fixed in the axial position.

The spring 13 biases the lever 7 rotationally (anti-clockwise in Figure 1) such as to keep the bolts 2 and 3 normally in a splayed axial position which allows engagement thereof with the respective locking seats for closing the door.

In order to open the door, it is sufficient to overcome the force of the spring 13. In this connection, the door is preferably of the type, known per se, provided with a nib 16 which can be actuated by means of a handle 17 (Figure 3). The nib 16 is designed to co-operate with a further cam arm 18 of the lever 7 so as to rotate the said lever, overcoming the force of the spring 13, in a direction which causes the axial movement of the bolts 2, 3 towards each other and their disengagement from the respective locking seats.

This movement of the bolts towards each other may be delimited by an end-of-travel stop 19 which is formed integrally with the shutter 1 and against which the arm 18 of the lever 7 comes into contact.

Preferably, the lever 7 also has, formed integrally on it, at least one flexible tongue 20 designed to come into contact against a shoulder 21 (which may also be formed by the same end-of-travel stop 19) in order to dampen gently and silently the contact movement of the arm 18 against the end-of-travel stop 19.

In order to increase further the silent operation of the door according to the invention, the possible vibrations of the movable components are minimized owing to the use of flexible lugs 22, or the like, preferably formed integrally with the arms 8, 9 of the lever 7 and designed to co-operate with the walls 12 of the rods 4, 5 so as to take up automatically the axial play between the said components and the shutter 1.

Obviously the door described may be subject to numerous modifications falling within the scope of the invention as defined in the appended claims.

CLAIMS

1. A door for closing a glove compartment, or the like, in particular for a motor vehicle, comprising a hinged shutter provided with at least two bolts which are arranged substantially opposite each other and normally kept in a splayed position by means of respective transmission rods which are biassed by spring means, wherein said transmission rods are articulated with respective, substantially opposite arms of a single actuating lever pivotally mounted on the shutter, at least one of the rods extending towards the respective arm of the lever with a transverse connecting portion.

2. Closing door according to Claim 1, wherein said arms of the actuating lever extend in a substantially transverse direction with respect to said transmission rods.

3. Closing door according to Claim 1 or 2, wherein said spring means comprise a torsion spring having one end designed to make contact against a fixed shoulder and an opposite end fastened to the actuating lever.

4. Closing door according to Claim 1, 2 or 3, characterized in that the actuating lever comprises at least one flexible tongue designed to come into contact against a fixed shoulder so as to dampen gently and silently the end-of-travel movement of the said lever.

5. Closing door according to any one of the preceding claims, wherein at least one of the transmission rods is articulated with the actuating lever by means of a shaped portion provided with at least one wall, or the like, designed to prevent the axial extraction of the said lever from its pivot.

6. Closing door according to Claim 5, characterized in that the actuating lever comprises at least one flexible tongue designed to co-operate with said wall so as to take up automatically the axial play between the lever, the transmission rod and the shutter.

7. A door constructed and arranged to operate substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

Application No:	GB 0107579.5	**Examiner:**	David Glover
Claims searched:	1-7	**Date of search:**	9 October 2001

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.S): E2A (AAK, AMXH, AMXW, AMXY)

Int Cl (Ed.7): E05B 65/12; E05C 9/04

Other: Online: EPODOC, JAPIO, WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
X	WO 95/27115 A	(Volvo) see figures 1-4 and page 3 line 5 - page 4 line 23	1, 2, 4
X	DE 4400628 A1	(Opel) see figures 6 & 7 and English language abstract	1, 2
X	US 4781407	(General Motors) see figures 4 & 5 and column 4 line 40 - column 5 line 33	1, 2

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.